Simply Magic

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CGSociety Feature :: Bewitched
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It might seem that a film about adult witches and warlocks living in the real world (not children attending school at Hogwarts) would offer the perfect opportunity for tons of digital magic, and certainly there is some in Sony Pictures 'Bewitched'. But, it turns out that much of the magic in director Nora Ephron's film was created the old-fashioned way…. well, almost old-fashioned.

The story in a nutshell: Will Ferrell's character (Jack), who is remaking the classic 1965 TV show "Bewitched," unknowingly casts a real witch in the lead role. Actress Nicole Kidman, who can twitch her nose like Elizabeth Montgomery, the actress who played the witch Samantha in the original TV show, plays Isabel who plays Samantha in (Jack's) remake of … oh, never mind. It's enough to know that Bewitched, the film, has TV show magic and real-world magic.

"The tricky part of this show was keeping things simple," says Carey Villegas, visual effects supervisor at Sony Pictures Imageworks. "The TV show magic needed to be a modern day version of the crude effects in the original TV show and Nora wanted to keep the real life movie magic nonchalant and not overpowering."

In the 60's TV show, characters appeared and disappeared because the camera was turned off, the actor moved, and then the camera was turned back on again. Simple. But, the characters look like they popped into view because the background shifted slightly. The effects crew used the same process for the film, but thanks to compositing software, the background doesn't shift.

For example, in the original TV show, Samantha's Uncle Arthur (actor Steve Carell) popped into and then walked out of mirrors. "Nora [Ephron] didn't want him to pop on," says Villegas, "so we had to come up with ways to reveal him more naturally." In one scene, as Ferrell paces back and forth in front of a mirror, the audience can see his reflection moving in and out of the mirror. To film an appearance by Uncle Arthur during this scene, a mirror was built into a set. As Ferrell crossed in front of the mirror, just at the last minute, a grip pulled the mirror away revealing a greenscreen behind. Uncle Arthur was composited into the greenscreen later.

"It was a simple gag," Villegas says. "One of Nora's [Ephron] key concerns was keeping the magic simple," says Villegas. "The magic was supposed to be part of the witches' and warlocks' everyday life, so it was casual and natural."

Similarly, Ephron didn't want Isabel's warlock father played by Michael Caine to materialize like a "Star Trek" character or pop into scenes – she wanted something more magical. "So, we had him appear in places he couldn't physically occupy," says Villegas. In one shot, we hear a doorbell ring. Isabel opens the door against the wall, but no one's there. When she closes the door, we see Dad behind the door in a space he couldn't have been.

"We used the same techniques as in the original TV show," says Villegas. "The camera is rolling. We stop it and have the character in place. And, then we start it again. But instead of having it locked off as they did originally, we can follow her to the door, the camera panning with her. The fundamentals are the same as in the original, but by applying modern day tools, we make it more elegant."

That trick required more imagination than technology – but other effects used CG effects and elaborate motion control camera photography.

For a shot near the end of the film, for example, CG software grew a tree in the neighbor's front yard. "It grows from nothing into the air," says Villegas, "and was created entirely in CG. We modeled and animated it in Maya. The complicated part was having it bloom – from a sapling into a full-sized tree – and then to populate the tree with beautiful apple blossoms. For that, Bob Winter came up with a Houdini procedure."

Houdini also helped technical director Matthew Cordner animate packing peanuts for a shot in which thousands of the annoying Styrofoam bits fly around a room. "The director wanted it to look like a snow globe," says Cordner, "so we used custom SOPs and CHOPs in Houdini to create a system that gave the

particles a fluid-like motion and gave me enough control to create the snow globe look." Then, Cordner gave the peanuts a little pizzazz. In some shots, they pause in front of Kidman and twirl.

For rendering, Cordner sent procedural surface and displacement shaders through RenderMan, using the software's soft shadowing to create the look he wanted.

CG techniques were also used by technical director David Howe to snake cables into place for a stereo system magically installed via witchcraft.
"I tracked in a shadow catcher as the cables moved up to the stereo," he says. To do this, he projected CG shadows onto fake geometry of shelves in the room; those shadows were then composited over the real shelves.

Compositing at Imageworks is typically done using the studio's proprietary software, Bonsai; however, compositor Ron Blue also relied on Autodesk's Flame system. "We had a small crew and had to get a lot of stuff done per person," Blue says. "Flame allowed us to be more interactive and Carey [Villegas] was a Flame artist, so he was familiar with the software."

“There were a lot of odd little things, a lot of one-offs. It was a good change of pace. Never boring.”

Blue’s work began in the previz stage, working with Villegas. “Bewitched” was Ephron’s first effects film, and after looking at hand drawn storyboards, the director wanted to see more interaction. “We did detailed animatics with elaborate compositing to mock up complex shots,” Blue says.

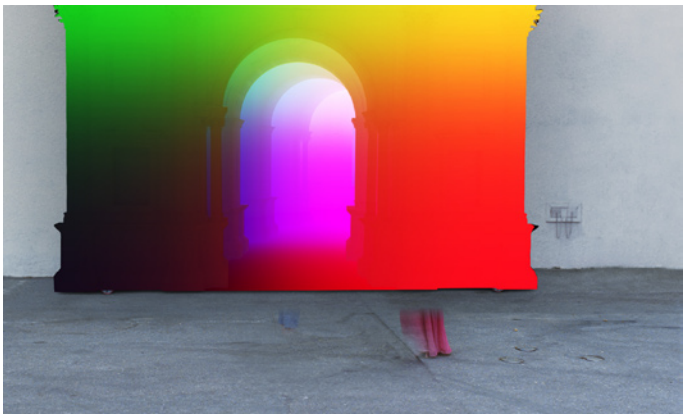
Much of Blue’s compositing work on the film, though, centered on blending live action elements from location shots with greenscreen motion control photography. In fact, some of the most intricate effects shots were those that helped Isabel fly on a broomstick. “Nora wanted little glimpses of her flying,” Villegas says. “For each glimpse, we devised different techniques.”

Isabel flies away from her house at night, the crew, using previz as reference, shot the background with a camera on a technocrane. Back at Imageworks, a 3D match move of the camera was extracted from the background plate. With that information driving a motion control camera, they filmed a stunt actress on a cable. The stunt actress flies out of frame, the camera cranes up over the house and then a subtle CG shadow flies over the roof.

Subtle in a different way was a shot in which Isabel’s reflection is seen in the mirrored building glass at night. Again, the crew match-moved a background plate and used that data to drive a motion control camera. This time, though, they put the stuntwoman on a motion base rather than a cable. That shot later came in handy when the effects crew had to create several frames of Isabel flying that were added at the last minute. By adding the reflection element to a matte painting of the sky and moon with CG trees, Blue was able to create “something from nothing,” as he put it.

In a third flying scene, Isabel has told Jack she’s a real witch. Furious at his reaction, she peels out on her broom. During her flight, she’s in frame three times.

It starts with the camera shooting over her shoulder, looking at Jack. With her back to the camera, she zips out of frame. The camera continues to focus on Jack, and because it has her POV (point of view), it simulates the flight path she takes. It goes from ground level to 40 feet in the air, and as it flies high in the air, Isabel passes quickly through a few frames. Then, once again taking her POV, the camera loops and dive-bombs back down toward Jack.



At the bottom, Isabel re-enters the frame, spins around Jack in a complete loop, and shoots back out of the frame. That last moment where she comes into frame, spins and shoots back out the same side of the frame that she entered, takes about two seconds.

For the swooping camera, Villegas filmed Will Ferrell using the new Spydercam Talon system, which, rather than flying a camera between two towers as was done for Spider-Man, moves the camera within a triangular volume, giving it even more freedom. Driving the camera was data input from a previz created in Maya. But, because the data was slightly altered during shooting, it was re-entered in Maya and adjusted to provide data for the greenscreen shots of the stuntwoman.

“The first two parts were pretty straightforward,” Villegas says. “The stunt actress just gets pulled up on cables using a motion control system; the camera was doing most of the movement. But the third part was the tricky part.”

It was tricky because the camera had to shoot in very quickly, stop while Isabel spun around Jack (Ferrell) for two seconds, and zip back out. “There is no motion control camera that fast,” says Villegas. “The fastest one I’ve used can move only 13 feet per second and it can’t stop and change directions.”

So, he created a special rig. Says Blue, the compositor, of the system: “Carey’s motion control rig did things I don’t think anyone has ever done before. They were moving the camera so fast it was unbelievable that it didn’t fly off the track. He pulled off camera moves that are almost physically impossible.”

Rather than using a boom arm for the camera, Villegas mounted the camera on a sled and put the sled on roller skate wheels. A motion control winch system pulled the sled up and down the track. “We had this rig moving at 40 feet per second and it could stop and change directions very quickly,” says Villegas. “We adapted software that we originally created for I Spy which allowed the camera to work more with rotations rather than translations. This allowed us the freedom to not have to rely on the slow boom arm of motion control.”

For the spin, the stuntwoman rode a six-axis motion base controlled with data from Maya. Because Isabel rides her broom sidesaddle, not astride it like Harry Potter and the Quidditch team, the effects crew needed to invent a saddle that could hold a stuntwoman safely. So, working with the stunt coordinator and special effects crew, they built a fiberglass shell that was molded to the stuntwoman’s body and bolted it to the motion base for the high-speed, spinning ride.

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Although that shot was the most technically sophisticated, Villegas’ favorite shot takes place on a sound stage with Kidman (Isabel) and Shirley MacLaine, who plays an actress who plays Samantha’s (Isabel/Kidman) mother. Never mind. Just know that the two actresses were playing actresses who were walking and talking between sound stages during a break while filming a TV show. They stop in front of a Roman colonnade that curves into infinity. While they stand there, Michael Caine, Isabel’s father, walks through the colonnade.

“Shafts of light shine on his face as he steps out of what looks like a beautiful set,” Villegas says. “They’re on a movie lot; there are lots of set pieces around. But as soon as he emerges, two grips come into the frame, and grab hold of the backdrop he just came out of, one on each side, and roll it out of the way revealing a wall right behind him. He has emerged from a place he could not have come from. It’s elegant magic.”

This was one simple effect that was more complex than it might seem, though. To create the appearance of a colonnade that stretched back for a distance around a corner, the crew built a huge greenscreen enclosure between two sound stages.

“The background plate looks odd,” says Villegas. “Michael Caine comes out of this big greenscreen enclosure and then these two guys move the greenscreen away.”

Later, the greenscreen enclosure was replaced with CG colonnades. The greenscreen moved by the actors playing grips was replaced with a painting of the colonnades. And, the space between the soundstages revealed in the background plate when the greenscreen was removed and filled in with a CG set extension so that it looked like a solid wall. Voila!

There were other shots in the film – a CG umbrella in a martini, a rent sign that moves magically, a talking head in a cereal box, and more. “There were a lot of odd little things,” says Villegas. “A lot of one-offs. It was a good change of pace. Never boring.”

Magic should never be boring.

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